

WHAT IS CLAIMED IS:

- 5           1. A personal viewer system, comprising:  
          an electronic image source;  
          an optical generator adapted to receive an electronic signal from the  
electronic image source and convert the signal into a light-based optical  
image; and
- 10           a head-mounted display including means for receiving the optical  
image, at least one ellipsoid reflector positionable in front of an eye of a user,  
and means for scanning the image onto the at least one ellipsoid reflector  
such that the image is reflected into the eye of the user.
- 15           2. The system of claim 1, wherein the optical generator comprises an  
image buffer adapted to receive and store electronic image signals from the  
electronic image source, an image resampling processor in communication  
with the image buffer, and an optical beam modulator in communication with  
the image resampling processor and adapted to emit a light-based optical  
20 image.
3. The system of claim 2, wherein the image resampling processor  
includes a resampling transformation algorithm for correcting geometric  
distortion of the electronic image signal.
- 25           4. The system of claim 2, wherein the optical beam modulator creates  
a tricolor optical light emission.
5. The system of claim 4, wherein the means for receiving and  
30 scanning the image comprises a scanner disposed relative to the optical

beam modulator to scan the light emission onto the at least one ellipsoid reflector.

6. The system of claim 5, including an optical fiber for conducting the  
5 light emission from the optical beam modulator to the scanner.

7. The system of claim 6, including a optical image mixer disposed  
between the optical beam modulator and the optical fiber for converting the  
tricolor optical light emission to a single optical light emission.

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8. The system of claim 7, wherein the optical image mixer comprises a  
mixing cavity having a white inner reflective surface for mixing the tricolor light  
emission and reflecting the mixed light through a pinhole exit into the optical  
fiber.

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9. The system of claim 7, wherein the optical image mixer comprises  
dichroic mirrors or prisms.

10. The system of claim 6, wherein the means for receiving and  
20 scanning the image comprises a scanner disposed relative to an outlet end of  
the optical fiber to scan the light emission onto the at least one ellipsoid  
reflector.

11. The system of claim 1, wherein the image scanning means  
25 comprises a torsion oscillator scan mirror for scanning the optical image onto  
the at least one ellipsoidal reflector.

12. The system of claim 1, wherein the image scanning means  
comprises a solid state micro-electric mirror for scanning the optical image  
30 onto the at least one ellipsoidal reflector.

13. The system of claim 1, wherein the image scanning means comprises a mirror assembly for scanning the optical image onto the at least one ellipsoidal reflector.

5           14. The system of claim 13, wherein the mirror assembly comprises a first rotatable mirror for receiving the optical image and reflecting the image onto a second rotatable mirror adapted to scan the image onto the at least one ellipsoidal reflector.

10           15. The system of claim 14, including a driver for adjustably controlling the speed of rotation of the first and second mirrors.

16. The system of claim 15, wherein the driver magnetically induces the rotation of the first and second mirrors.

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17. The system of claim 1, wherein the at least one ellipsoidal reflector has an inner surface that is partially reflective so as to permit viewing therethrough.

20           18. The system of claim 1, wherein the head-mounted display includes a motion orientation sensor in communication with the signal generator or image source for altering the generated image as the user's head is moved.

25           19. A personal viewer system, comprising:  
an electronic image source;  
an optical generator including an image buffer adapted to receive and store electronic image signals from the electronic image source, an image resampling processor in communication with the image buffer, and an optical beam modulator in communication with the image resampling processor and  
30 adapted to emit light-based optical images corresponding to the electronic image signals; and

a head-mounted display including a scanner disposed relative to the image beam modulator such so as to receive the light-based optical images and scan the images onto at least one ellipsoid reflector positionable in front of an eye of a user such that the image is reflected into the eye of the user.

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20. The system of claim 19, wherein the image resampling processor includes a resampling transformation algorithm for correcting geometric distortion of the electronic image signal.

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21. The system of claim 19, wherein the optical beam modulator is creates a tricolor optical light emission.

22. The system of claim 19, including an optical fiber for conducting the light emission from the optical beam modulator to the scanner.

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23. The system of claim 22, including a optical image mixer disposed between the optical beam modulator and the optical fiber for converting the tricolor optical light emission to a single optical light emission.

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24. The system of claim 23, wherein the optical image mixer comprises a mixing cavity having a white inner reflective surface for mixing the tricolor light emission and reflecting the mixed light through a pinhole exit into the optical fiber.

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25. The system of claim 23, wherein the optical image mixer comprises dichroic mirrors or prisms.

26. The system of claim 19, wherein the scanner comprises a torsion oscillator scan mirror for scanning the optical image onto the at least one  
30 ellipsoidal reflector.

27. The system of claim 19, wherein the scanner comprises a solid state micro-electric mirror for scanning the optical image onto the at least one ellipsoidal reflector.

5           28. The system of claim 19, wherein the scanner comprises a mirror assembly including a first rotatable mirror for receiving the optical image and reflecting the image onto a second rotatable mirror adapted to scan the image onto the at least one ellipsoidal reflector, and a driver for adjustably controlling the speed of rotation of the first and second mirrors.

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29. The system of claim 28, wherein the driver magnetically induces the rotation of the first and second mirrors.

30. The system of claim 19, wherein the at least one ellipsoidal  
15 reflector has an inner surface that is partially reflective so as to permit viewing therethrough.

31. The system of claim 19, wherein the head-mounted display  
includes a motion orientation sensor in communication with the signal  
20 generator or image source for altering the generated image as the user's head is moved.